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SUMMARY

Based on the revised dissemination plan (D4.2)\textsuperscript{1} issued on 17 April 2015 which integrated the recommendations of the European Commission expressed in its letter of 17.12.2014 with subject “Result of the review of your FP7/ICT project 611327”, a number of different communication actions were taken to raise awareness of the HTML5Apps project.

In addition to continuing to publicize the project’s activities, events and results, the redesigned plan defines a more proactive and systematic approach to engage with European SMEs, developers and other communities as recommended by the European Commission.

This second dissemination activity report provides an analysis of what has been accomplished for the period October 2014 - September 2015.

\textsuperscript{1} D4.2 (re-submitted): https://bscw.ercim.eu/bscw/bscw.cgi/d1061199/D4.2-Dissemination\%20Plan.pdf
TABLE OF CONTENTS

1. Introduction ........................................................................................................................................... 7
2. Interviews with European SMEs ............................................................................................................. 8
   2.1. Interview with Beepeers, social apps provider .................................................................................. 8
   2.2. Interview with UbiqWare, cross-platform multi-device provider ................................................... 11
   2.3. Interview with Cocomore, agency for marketing and IT services ............................................... 15
3. Project’s online presence ......................................................................................................................... 20
   3.1. Web site metrics ............................................................................................................................... 23
   3.2. Social media metrics ....................................................................................................................... 25
   3.3. More systematic and proactive online activities aimed at developers ......................................... 26
4. Participation at events .............................................................................................................................. 28
   4.1. Presentations ..................................................................................................................................... 28
5. Press outreach .......................................................................................................................................... 31
   5.1. Press releases ................................................................................................................................... 31
6. Conclusion ................................................................................................................................................ 32
Appendix 1: Press release - 15 October 2014 ........................................................................................... 33
Appendix 3: Press release - 29 September 2015 ......................................................................................... 38
Appendix 3: Press articles (most recent first) ............................................................................................. 40
Appendix 4: Slides presented at the Inria-Industries event ....................................................................... 42

List of Figures:

Figure 1: Home page of the HTML5Apps Web site .................................................................................. 20
Figure 2: This HTML5Apps deliverable stayed as top news item on the W3C hp for 3 weeks ......... 21
Figure 3: Project ack. on the Web Payments page - w3.org/Payments .................................................. 22
Figure 4: Project ack. on the Trust and Permissions CG page - w3.org/community/trustperms/ .... 22
Figure 5: Web site statistics - from 1 October 2013 to 30 September 2015 ...................... 23
Figure 6: The top five of the HTML5Apps site referrers (from 2nd Oct. 2014 to 30 Sept. 2015) .... 24
Figure 7: Mobile Web roadmap access statistics (from 16 Jan. to 30 Sept. 2015) ......................... 24
Figure 8: “Web mobile roadmap” excellent ranking in Google ............................................................... 25
Figure 9: Profile description of @appsHTML5 as of 30 September 2015 ............................................. 25
Figure 10: A snapshot of topics discussed within the APIs Specifiction .............................................. 27
Figure 11: HTML5Apps session in the W3C Track@WWW2015 ......................................................... 30

List of Tables:

Table 1: Popular posts on the project’s Web site for the past year ..................................................... 23
Table 2: Audiences exposed to HTML5Apps during the 2nd year of the project ............................. 30
1. **INTRODUCTION**

The overall objective of the dissemination activities is to ensure visibility for the HTML5Apps project, in order to maximize its impact on the broadest audience, with a particular target of European SMEs and developers.

This report describes the outreach activities performed during the second year of the HTML5Apps project. To help strengthen the awareness and engagement of European developers and SMEs in the project’s works, we put in place:

- interviews between the project and three European SMEs representatives, in order to better understand their use of HTML5 technologies for app development and also their needs in terms of other standardized functionalities,
- more online promotion via the Web site, through pertinent blog posts and the project’s twitter account,
- direct outreach to developers, by doing a targeted selection of five events where to expose project results. We re-evaluated our initial plan for presentations and deprioritized certain events with a broad audience (e.g. Mobile Web Congress 2015) in order to free up resources for events at which to target developers, as recommended by the European Commission,
- a wider reach and distribution of project’s press releases, by going beyond releases in the local language French required by the DoW and providing releases in other languages (English, German, etc.), as recommended by the European Commission.
2. Interviews with European SMEs

Part of the objectives of the HTML5Apps project is to ensure that European small and medium enterprises and their developers are in a better position to understand and influence the future of the Web platform on which they rely to develop innovative services. The HTML5Apps project took a direct approach to sample more details and input from SMEs by conducting interviews with three European SMEs on their usage of Web technologies and the need of new standards that they have encountered in their practice. Based on suggestions from a few W3C Offices (UK & Ireland, Spain and Germany & Austria), the HTML5Apps team first selected the SMEs, started the conversation and then scheduled the interviews between May and September 2015. The goal of these interviews was to gain a more detailed understanding of the barriers that developers from European SMEs encounter, and what reasons may make them avoid or prevent them from developing mobile apps using Web technologies.

The three SME interviews, published on the project Web site, highlighted the following needs from Web developers in their markets:

- the ability to use Push notifications in their apps was a common theme to the three SMEs, which were tracking the progress of the ongoing standardization and deployment of the W3C Push API with great interest;
- the ability to reliably operate operations offline was another major theme of interest, and there again, the ongoing work on standardizing ServiceWorkers in W3C was met with great expectations;
- interacting with the surrounding physical environment via Bluetooth Low Energy was a critical component of one of the interviewed company (Beepers), to enable features specific to a given locality (e.g. inside a concert room);
- the desire to integrate smoothly with existing identity providers (such as Facebook or Twitter) matched some of the ongoing discussions within the W3C Social Web Interest Group as well as proposed new work to facilitate authentication proposed by the FIDO alliance.

Based on this input, the HTML5Apps project researched which W3C standards are or will be applicable to these requirements. In addition, since a common theme of the interviews was the interest of these SMEs in using hybrid applications, especially with the Cordova project, the HTML5Apps project invested in ensuring greater continuity between hybrid and browser applications.

The three interviews are detailed below.

2.1. Interview with Beepeers, social apps provider

The first of these interviews was conducted in June 2015, with Fabrice Castellon and Alain Prette, the co-founders and leaders of Beepeers, an SME based in the South of France, specialized in the development and publishing of social applications. The interview is available below:

*Posted on July 9, 2015 by Dominique Hazael-Massieux*
As part of the HTML5Apps project work, the team is trying to gain a more detailed understanding of the barriers that developers from European SMEs encounter, and what the subsequent reasons make them avoid or prevent them from developing mobile apps using Web technologies. In addition to participating at developer events and interacting via social media, we are also conducting a few one-to-one interviews with developers with the goal to dive in more details in some of these barriers.

The first of these interviews was conducted in June 2015, with Fabrice Castellon and Alain Prette, the co-founders and leaders of Beepeers, an SME based in the South of France, specialized in the development and publishing of social applications.

Hello guys, can you tell us more about your company and its business at a high level?

Beepeers was founded 3 years ago in Sophia-Antipolis in France. We provide a platform for building and publishing white-label social network applications, typically used inside enterprises, or for specific events. We aim at enabling widespread use of mobile technologies for a social usage, thanks to a brand-new line of social apps, available on-demand.

Our customers include radio and media companies, some local administrations and event organizers. We have focused on a product-based approach: our customers trust us to build a response to their specific needs, rather than seeking an all-encompassing (but likely ill-fitting) solution.

What platforms does your development target? How much rely on native technologies vs. Web-based ones?

Our two main targets for mobile devices are the iPhone and Android-based phones; we can also support Windows phones and have deployed applications targeted at the iPad devices. Early in the life of our company, we experimented with using HTML5 technologies to deliver our services on mobile as we were receptive to the idea it could help us reduce our development costs. But in the end, we made the decision to only focus on native.

Could you elaborate on the reasons that made you move away from the Web technology stack?

There were multiple reasons behind that decision:

- Some of our customers had a negative experience with the UX quality of HTML5-based development on mobile, and were thus not very open to that solution;
- We also ourselves came to the conclusion that native had a better return on investment when it came to building the most fitting user experience on a given device; building the equivalent with HTML5 required a lot of efforts, with non-trivial maintenance costs;
- While there is a cost in maintaining our code base across these different platforms, the expertise we have in building these specific solutions is an added value of the service we provide to our customers; each platform
comes with its own UX language (navigation patterns, sharing actions), and being able to stick to that language has proven not only useful in building good UX, but is also proving a good source of inspiration for further evolutions;

- Presence on application stores remains a critical part of the marketing and communication needs for our customers; that is where many of their users will end up looking for the app they seek to provide;
- Although our apps don’t have ads per se, they need to show sponsorship inserts, and we found that it is much easier to integrate those in the native UX flow;
- Some of our features require a reliable offline system (e.g. downloaded tickets for an event), which is a much more simple story in native;
- Likewise, the ability to use push notifications is a critical piece to get users engaged, especially for event apps, where they let us build momentum ahead of the actual event;
- In most cases, the users of our apps sign in via a separate existing social network (e.g. Facebook, Twitter, LinkedIn) — it saves them the need to create and manage a new account. The workflow to integrate smoothly with these 3rd-parties is much better done with native technologies.

**Is there any role for Web technologies in your product?**

Yes. There are still some pieces where we are using Web technologies as fitting some of our requirements, even though most of the pieces exposed to end user by our apps are built using native technologies. For example:

- For integration with third-party services (e.g. ticketing): HTML5 gives the right interoperability we need to display interactive content from other parties; but we keep the interactions to a very limited subset (e.g. no navigation);
- The CMS that our customers use to publish their content to their users is Web-based, and is used to aggregate and broadcast content from other Web sources (e.g. other social networks, RSS feeds); but the content so gathered is transformed before being displayed in our apps, it’s not served as-is;
- In some of our apps, we integrate a Web view that lets users see linked content while remaining in the app.

**So, in summary, you don’t see the Web playing any additional role on mobile for your company?**

Actually, we have started very recently re-investing in a Web-based mobile solution for some of our customers. First, today, you cannot afford to provide a Web service that is not also mobile friendly, and in most cases we have already been providing a Web equivalent to our mobile apps. Since getting Web content mobile friendly is costly no matter what, it makes sense to get this mobile-friendly Web site to bring an alternative experience to our native apps. Second, and more importantly, we have started to invest in pure client-side applications (based on the Angular.js framework), and we are seeing very good results out it with some or our
customers. In particular, it has enabled our more advanced customers to have more control on the service they provide to the users, since they can easily customize the templates through which their content is displayed. Compared to a traditional server-based approach, we have found the client-based approach to represent a much more reduced investment, and this is making us look again at our return-on-investment analysis. It is not our priority development, but we do see it as a promising direction to explore. Native apps also come with their own costs: getting an app reviewed and accepted create delays and risks, and while managing it participates to the service we provide to our customers, having a Web presence allows for a quicker turn around. But overall, in our opinion, it is not a matter of native winning over native or vice versa: it is a matter of providing the right UX to our customer users.

What are the main features you would like to see coming to the Web to improve your Web-based product?

Push notifications is the number one feature we’re interested in! It is great to see them coming to the browser, and we plan on investigating that possibility. Likewise, support for offline operations via Service Workers is promising. Being able to store tickets off-line, and to synchronize data with our servers in the background would help a lot! For ticketing, one specificity is that what we need some level of guarantees that the stored content cannot be tampered with, even by the users themselves. In our native apps, we have used interactions with iBeacon to facilitate integration with local marketing, and that is not available on the Web today. As alluded previously, being able to integrate smoothly with social connectors is also very important for us. Overall, having a very responsive user interface, with immediate reactivity is critical to building the kind of UX our customers want. For any new feature, of course, we will need to evaluate their impact on the user experience; for instance, find out if “permissions requests” are not too intrusive.

Thanks, great input! A number of these features are already under development in W3C, and we’ll look into what it takes to get the others started as well!

2.2. Interview with UbiqWare, cross-platform multi-device provider

The second interview was done with a Spanish startup, named UbiqWare. It is based in Asturias, North of Spain. This company is specialized in the development of cross-platform multi-device software solutions, offering products, services, knowledge and experience to other software companies. The interview was conducted with Nacho Marín, UbiqWare CEO, and available below:

Posted on September 22, 2015 by Dominique Hazael-Massieux

The HTML5Apps team continues its series of SMEs interviews across Europe. Today, we go to Spain, and more precisely to Gijón (in Asturias, north of Spain), where is located the
startup UbiqWare. UbiqWare is specialized in the development of cross-platform multi-device software solutions, offering products, services, knowledge and experience to other software companies.

**Hello, can you tell us more about your company and its business at a high level?**

UbiqWare is a startup focused on improving the ability of other software companies, mainly but not solely start-ups, to develop software. More specifically, we help companies to:

- Create cross-platform solutions, including back-end, thus providing final users with access via the Web browser (desktop, mobile and, in general, any form factor) and mobile apps (mainly based on Apache Cordova, but also applying native development when required);
- Adopt agile methodologies that facilitate success in software projects, regardless of their complexity. We propose tools such as the Atlassian suite (JIRA, JIRA Agile, Confluence, etc.) or other free alternatives, such as Redmine. We put a strong focus on continuous integration and continuous delivery/deployment. For this, we use DevHaven, our solution for continuous integration and delivery with a special focus on cross-platform development, with initial support for Apache Cordova projects, and plans for Grails, native iOS, native Android and Web projects soon.

**What is your experience in developing cross-platform mobile applications?**

Part of the team is coming from the R&D department of Fundación CTIC. We worked in projects involving development under native and (desktop-only, responsive and mobile-first) Web development. In the early stages of our work in CTIC, Web and native were separated worlds. JavaME, Symbian and Windows Mobile were the most popular technologies used, whereas XHTML-MP and other HTML subsets and flavors were used for mobile Web development. In particular, we worked on MyMobileWeb, an open-source platform for browser detection which delivered the most suitable markup (and rest of resources) formats.

Since we created UbiqWare with two other colleagues (Jorge Román and Mario San Román, with large experience in back-end development) in November 2015, we worked in the following projects (while developing DevHaven):

- We first collaborated with a Spanish startup on a cloud service to provide companies with a unified vision of their digital properties and general business performance by means of the integration of all their business metrics, Web analytics, campaigns and social media data in a single panel. They work with quite a few well-known international companies from a variety of industries. We analysed the code of their Web app and created a much smoother version that was packaged as an Apache Cordova app for iPad, adding offline capabilities. Thanks to their Web development skills, they are creating a universal iOS version and an Android version, both for mobile and tablet devices. We are now starting another project improving the way in which they organize their code and software.
development methodology, trying to take them to a single codebase that finally generates Web apps and mobile apps. This company is the first user of DevHaven, in its current internal stage.

- Support for a Web development company in mobile apps creation. They have designed Web sites and applications for public institutions or consulting companies. Following increased requests from customers to create a mobile app in addition to a Web application or site, they chose UbiqWare as their technology provider and advisor to create cross-platform solutions based on responsive Web + Apache Cordova (and the corresponding plugins and extensions).

- Development of a mobile video surveillance application for a company that provides video surveillance services for large companies. One such company has started to complement their fixed video surveillance system with the use of a mobile application by their security guards. The first version of the application was developed for iPad, under a native development approach. An Android version for tablets is expected to be requested in the next months. This is a case in which performance suggested a native approach, due to the requirement to display several video sources as smoothly as possible while providing a UI with minimum response time.

- Mobile application to manage the balance associated to NFC bracelets used for digital payments, developed for one of the leaders in Spain in the field of digital payments. It has been developed in Apache Cordova.

**What do you think about the gap between native and Web apps?**

When the guys in Nitobi, the original company who created PhoneGap later acquired by Adobe, were asked about the future of PhoneGap, they said the ideal situation would be that PhoneGap would no longer be required. They expected that the path leading to browsers having access to native features would continue, thus making the existence of tools such as PhoneGap (contributed to the Apache Foundation as an open source later named Apache Cordova, which is the foundation to PhoneGap) unnecessary. Unfortunately, the expectations on Device APIs in Web browsers have not been fulfilled and there are many cases in which native development is required. Sometimes, completely using a native approach or by enhancing hybrid technologies with native plugins.

It is also true that the operating systems and browsers makers are reducing the gap. Apple used a different JavaScript engine in their UIWebView native component, much slower than the one used by Mobile Safari. Their new WKWebKit is much faster. Google has recently provided Chrome’s WebView component in Android as an independent software piece than can be updated separately of Chrome itself and is focusing on improving its performance. Google also encourages other Android browsers makers to release their own WebView components, so technologies such as Apache Cordova allow developers to choose which WebView to use.

In addition, more powerful processors, larger memory chips and faster secondary storage technologies are included in newer devices. This reduces the difference in the perception of performance for human beings, between Web applications and native applications.
This is something that has been evolving day after day since the creation of hybrid development approaches. Therefore, the amount of business cases in which hybrid development can compete with native development is increasing. This is the reason why development teams with skills in responsive or mobile-first Web development dare to start with the release of mobile applications via app stores.

And this is the reason why the first platform to be supported in DevHaven is Apache Cordova. Web developers focus on HTML, CSS and JavaScript + knowing the Cordova plugins required to enhance functionality. DevHaven stops them from dealing with requiring an OS X to build for iOS, Windows to build for Windows Phone, installing and updating Xcode, Android SDK and Visual Studio, etc.

**Which platform you prefer to rely on: native or Web? and why?**

We rely on Web development, including hybrid development with Apache Cordova. We only go for native if absolutely required, as you have seen in our experience in cross-platform development.

**How do the requests and needs from your customers affect your choices in this space?**

From the development point of view, customers with the sufficient technical knowledge to have an opinion about it, they would like that Web technologies allowed potentially any kind of project, as a means to code once and execute in as many platforms as possible and therefore reduce development and maintenance costs. From those requesting our service DevHaven, they find that a service that let them focus on Web development by reducing the attention that they would need to pay to things as compilers, SDKs, etc. is really useful.

But in general, our customers want both a responsive Web app and a presence on the app store, for which an hybrid app (sometimes, but not always built upon the responsive Web app) is required. While we believe in the Web as a universal platform, our customers are not quite convinced yet!

**What are your needs in terms of Web standards? Which Web standard(s) are you waiting for specifically?**

A complete Device API stack. I know it is not easy, but it’s free to ask :) This would stop us developers from requiring Cordova plugins, although Cordova (or similar solutions) would still be necessary in order to generate the mobile app.

The APIs for which we call upon Cordova plugins the most frequently are:

- file and file-transfer plugins, to implement local caches and, thus, offline access to information;
- device plugin, to harvest device information for conditional functionality or for analytics purposes;
- and push-messaging plugin to send remote notifications.
Thank you for your time! I will note that your town is also the home of the W3C Spanish Office!

2.3. Interview with Cocomore, agency for marketing and IT services

The third interview was set up with Cocomore, a German SME headquartered in Frankfurt, with branches in Spain (Seville) and Switzerland (Geneva). Cocomore is an international agency for Marketing and IT services, developing integrated communication and IT solutions with best practices in crossmedia, branding, CRM, marketing automation and e-commerce. The interview was conducted with Alejandro Leiva, technical lead of mobile and emerging technologies, and with Christian Winter, Head of Frontend, specialized in responsive Web design and the optimization of interactive Web applications for mobile devices. The full interview is available below:

**Posted on September 30, 2015 by Dominique Hazael-Massieux**

The HTML5Apps continues its series of interviews of European SMEs. Today, we go to Germany, where the Cocomore headquarters are located. The discussion was held with Alejandro Leiva, based in the Cocomore Spanish office in Seville, who is the technical lead of mobile and emerging technologies, and with Christian Winter, Head of Frontend Development in Frankfurt, specialized in responsive Web design and the optimization of interactive Web applications for mobile devices.

Hello! Would you please describe your company, its mission/vision and its customer audience?

Cocomore is an international agency for Marketing and IT services with 140 employees at our head office in Frankfurt, and in Geneva and Seville. We are developing integrated communication and IT solutions with best practices in crossmedia, branding, CRM, marketing automation and e-commerce.

Our mission and our promise are measurable results in these particular areas, achieved using creativity and technology. Our main focus is on projects where it comes not only to appeal to customers, but also to create a long-term customer relationship. Therefore, data and IT is important but above all, you need content which is appealing, entertaining and useful for communication with customers.

That is why Cocomore has not only designers and creative directors, but also editors. On the basis of our four values, which are innovation, tradition, progress and responsibility, our agency is trusted by leading clients including: the European Union, Lilly, Nestlé, Procter & Gamble, Merz, RTL and Sanofi. Our customer relationships usually grow from year to year and are long-term based.

Can you tell us more about cross-platform mobile applications you have worked on?

Cocomore has extensive experience in the implementation of native and cross-platform apps.
Recently, we have accomplished a project regarding a cross-platform mobile application for Germany’s largest drugstore chain: dm. We developed a game app, named “Mission Morgen” to support communication around sustainability topics. After the functional concept phase was completed, we looked at which technological approach would be best to implement the app; in particular, we evaluated which of a pure native or hybrid app would fit the project. For reasons of cost, time, supported devices and the required features, we decided to go with a hybrid app.

Our technology selection has proven to be the right one: the combination of ngCordova, AngularJS and Ionic allowed us to focus on the important tasks as we did not need to spend much time on the development of basic functions. Especially Ionic provides an optimal basis. With the use of AngularJS, we were able to divide the tasks clearly and to scale optimally the frontend team. In addition, thanks to this technological choice, we have retained over the entire duration of the project a good code base and we were able to integrate new modules quickly and with high quality in the existing app. The backend development was realized on top of Drupal. The resulting free application is available for smartphones with the operating system iOS or Android.

As another example, Cocomore developed a pure native mobile application for Pampers. We are currently evaluating relaunching it as a hybrid app. Our goal is to provide updates with new features or extensions several times a year. Regularly, we provide information with the dynamic newsfeed on the homepage of the app about current actions on the Web site and on Facebook (competitions, new craft instructions, new stories to download). The Web site and the mobile app are optimally matched: there is no duplication of content, the app features complement the Web site features.

Initially, when we first developed the app, we wanted to target as many mobile devices as possible, so we designed two native apps, one for Android and one for iOS. We have now decided to re-launch as a hybrid app since this means a smaller development cost and the opportunity to operate on more mobile devices.

Cocomore has realized many other mobile projects, e.g. an iPad app for our client Fresenius. This app teaches health care professionals in an entertaining way about the benefits of the product OsvaRen. It is a very visual app with embedded videos and an in-app game.

We also developed a guided product tour for the medical device company Spine Art. It shows to surgeons the product range of implants, how-to-videos and animated 3D visualizations of their products.

Other projects included a career app for the HR department of a large pharmaceutical client, a recipe database targeted at diabetes patients to easily monitor calory intake, an ecommerce app allowing consumers to shop diapers when waiting for the bus or tram. And many more.
What are your views on native vs Web apps?

A native app needs to be developed in specific programming language which is determined by the operating system such as Objective C, Swift, Java, C++, C#, XAML. For that you need a programmer who has knowledge of all development methods (IDE’s development tools, emulators, debuggers, SDK’s, etc.) in addition to the programming language or more software developers for each varying operating system.

Web apps are very different in this regard: they can be programmed by an experienced Web developer for several different smartphone operating systems without having unique knowledge about the device-specific development methods. For us, with our strong existing engineering skills in Web development, this is a huge benefit.

Moreover, native applications are designed for an operating system such as iOS, Windows Phone or Android, which means they run only on these devices. Here, the different operating system versions have to be considered, so that the correct functionality is ensured. When a new version of the operating system is introduced, the native app must be updated.

This does not affect Web apps. Web applications are specially programmed HTML5 sites that recognize the mobile device and optimize the content for representing, they run on all Web-enabled devices.

The big drawback of Web apps is their lack of access to phone specific functionalities like camera, microphone. Since Web apps run in the browser of the device access to phone hardware is very limited.

Cocomore deliberately focuses on cross-platform mobile applications (also called hybrid apps), which help bridge the gap between native and Web apps. This kind of application consists of a Web app, i.e. a backend and frontend running on a server. Thereby, the app can also be accessed by desktop browser. It is then displayed as a normal Web site.

The second component is an app container which can be uploaded to the various app stores. This container allows the access to the smartphone hardware and it draws its content from the Web app. Thereby it combines the advantages of both types of apps. In fact those hybrid apps are build using Web technologies and with some native code, so they can be converted via framework in a native app container very easily. But due to their architecture leveraging the many advantages of the Web applications, such as the cross browser compatibility and the cost benefit, the future could be these hybrid apps. The most important factor being here the availability of all the native features.

Ultimately, which considerations drive your choices between native or Web?
Depending on the individual requirements, each of these applications can be a better choice. If you want to create an app that makes very advanced use of the hardware and has high performance demands (execution speed, processing speed, output speed / graphics), a native app will be the better choice. The same applies if a high level of integration in the operating system such as look and feel of the UI elements or interaction with other applications is required. Also if the app should be executable without an internet connection, the native app is a better fit.

A Web app is particularly advantageous regarding total cost of ownership and implementation time. It bears comparably low development costs and short development periods. This technology is directly accessible via a link, so it has the ability to run on many mobile devices and operating systems and runs on each smartphone without installation.

In practice, the approach we currently recommend to our customers is to have a mobile Web portal for general information sharing, and a cross-platform hybrid app for more interactive / engaging content.

What is missing to do the interactive content from within the browser, rather than going through a hybrid app?

There are various considerations that make a browser-based approach less attractive:

- Our customers don’t necessarily accept that a browser-based approach can give good enough results in terms of performance and UI,
- They tend to see also a “real” app as a better marketing/communication channel,
- The app tend to be for shorter-term campaign, with often a gamification aspect, and it’s not obvious to end-users that you would obtain a game or game-like experience from within the browser,
- On the Web, our quality expectations require good results on a much wider set of platforms that we would target with our hybrid apps (i.e. mostly iOS and Android), and thus the more interactive you make the Web app, the more likely you’ll encounter bugs in older or less advanced mobile platforms.

How do you deal with adapting the user interfaces of the apps across devices and platforms?

For adapting the app across devices of various sizes and shapes, we’ve found that using responsive design via the Ionic framework lets us deal quite well with the huge diversity of devices on the market, from smartphones to tablets. There are some issues when dealing with older Web views (esp. on Android), but it remains overall quite manageable.

With regard to the specific native look and feel of each platform, we usually recommend to use a single UI paradigm across platforms, without trying to
customize it. Once you start customizing the UI, and taking into account e.g. the inconsistent availability of a hardware back-button between iOS and Android, it makes maintaining the whole app workflow much more difficult.

As an SME, what are your needs in terms of Web standards? Which Web standard(s) are you waiting for specifically?

The arrival of the Push API is very exciting for us! Clearly this will make the offering of browser-based content a lot more attractive to many of our customers, even for the simple mobile portal. We can’t wait to see it adopted in more browsers, and we already know we’ll use it in our projects in the upcoming few months.

An area where we’ve found we had to rely on specific Cordova plugins in our hybrid developments is for media playback; for instance, we’ve found that playing an audio file in loop using the basic audio capabilities of a Web view wouldn’t work well on mobile, and that’s a pretty fundamental issue e.g. in a game.

We’ve also had issues with using Web sockets in some older Web views, but this had more to do with implementation bugs than issues in the standard from what we’ve determined.

We’ve struggled for a while with storing data — localStorage proved unreliable as the stored data could be wiped out by the OS; but we’ve now switched to Indexed Database which seems to solve that issue well enough for us.

Any other business related to mobile, Web and standards?

We are an agency for marketing and IT. We help our clients with state-of-the-art technology serving a marketing purpose. This can be CRM system implementation, Web and app development, e-commerce platform development, data management, social media and the like. In most of those projects, and in today’s world, systems are no longer independent. A very big issue is the creation of interfaces in order to connect systems creating a technological ecosystem. Standards around communication interfaces between systems are a very important topic. Being in a position to shape and apply standards is one of our motivations of being a W3C member.

Thank you!
3. PROJECT’S ONLINE PRESENCE

The project’s Web site is at http://html5apps-project.eu/ (see Figure 1). Both the Web site and associated Twitter account are the project’s primary communication channels. The site contains the project blog with articles announcing news relevant to the project (SME interviews, upcoming presentations, availability of deliverables, etc.).

![HTML5 Apps](http://html5apps-project.eu/)

**Figure 1: Home page of the HTML5Apps Web site**

Additionally, we strengthened our online presence by using the W3C Web site\(^2\) to help spread the HTML5Apps project’s results. The very high Google PageRank of w3.org (9 out of 10) ensures that information from W3C shows up in top pages from search results. As a reminder, the W3C Web site has over seven million “hits” each day, and is a widely recognized reference site for information on Web technologies.

Using a systematic approach, we made sure that HTML5Apps was advertised in the following pages of the W3C Web site, all of them being available to the general public:

\(^2\) W3C Web site: [http://www.w3.org/](http://www.w3.org/)
• The W3C home page ([http://www.w3.org/](http://www.w3.org/)) and the “News” page ([http://www.w3.org/News](http://www.w3.org/News)): this is where we published news directly supported by the project, such as W3C working drafts and new editions of the mobile roadmap. Figure 2 shows a snapshot of the W3C home page taken on 28 September 2015 announcing the availability of the standardization roadmap developed by the HTML5Apps project.

![W3C Home Page Snapshot](image)

**Figure 2:** This HTML5Apps deliverable stayed as a top news item on the W3C home page for over 3 weeks

• W3C Working Groups, Activity Statements, Workshops and Overview pages: we made sure that the project’s acknowledgement was duly mentioned on the relevant pages. For example, Figure 3 shows the W3C page dedicated to the Web payments activity, and Figure 4 shows the Trust and Permissions Community Group page.

• The “Talks” page ([http://www.w3.org/Talks/](http://www.w3.org/Talks/)): where all presentations by HTML5Apps project team members were announced and remain referenced.

The HTML5Apps Web site is our main dissemination channel. We have closely monitored the reach of the HTML5Apps Web site and its Twitter channel by running and analyzing...
site statistics. In addition, we set up a process to monitor the activity of other relevant twitter accounts in order to retweet the most interesting news. Some metrics are detailed in the following sections.

Figure 3: Project ack. on the Web Payments page - w3.org/Payments

Figure 4: Project ack. on the Trust and Permissions Community group page - w3.org/community/trustperms/
3.1. **Web site metrics**

As of 30 September 2015, we published a total of 45 posts on the project’s Web site. Since its launch, the Web site has been viewed 31,271 times in total (compared to 7,648 views recorded at the end of the 1st year of the project) that is a four-fold increase. As seen in Figure 5, September 2015 was the busiest month with 4,350 views, closely followed by October 2014 with 3,427 views, when the HTML5 standard was announced.

![Figure 5: Web site statistics - from 1 October 2013 to 30 September 2015](image)

As shown in Table 1, the Web site stats indicate that during the last year, the 10 most-popular posts are:

<table>
<thead>
<tr>
<th>Popular Post on HTML5Apps Web site</th>
<th>Number of views</th>
</tr>
</thead>
<tbody>
<tr>
<td>HTML5 is a Web standard!</td>
<td>3,199</td>
</tr>
<tr>
<td>[New Edition!] Standards for Web apps on mobile – January 2015</td>
<td>1,034</td>
</tr>
<tr>
<td>[Latest Edition!] Standards for Web apps on mobile – August 2015</td>
<td>693</td>
</tr>
<tr>
<td>HTML5Apps at MWC’15</td>
<td>588</td>
</tr>
<tr>
<td>Web Payments Activity Launched</td>
<td>508</td>
</tr>
<tr>
<td>[Web Payments] Use Cases Published</td>
<td>410</td>
</tr>
<tr>
<td>[Survey] 2015 Developer Skills, by VisionMobile</td>
<td>313</td>
</tr>
<tr>
<td>[New edition!] Standards for Web apps on mobile – October 2014</td>
<td>296</td>
</tr>
</tbody>
</table>

**Table 1: Popular posts on the project’s Web site for the past year**

This illustrates that we are driving interest for a variety of sources of HTML5Apps news, with both standardization results and promotion events.
The five top referrers, i.e. the origins of the HTML5Apps Web site requests, are detailed in Figure 6. It shows that the W3C Web site (w3.org) plays an important support role in promoting the results (either via a home page news item or a project acknowledgment shown on some other pages). Twitter also greatly helps direct the followers to the projects’ results.

![Figure 6: The top five of the HTML5Apps Web site referrers (from 2nd Oct. 2014 to 30 Sept. 2015)](image)

We also decided to specifically track the number of views related to the by mobile roadmap page, since this is one of the main dissemination vehicles of the HTML5Apps project. The curve shown in Figure 7 below shows two important peaks: we had 4469 visits on 2 February 2015, when we released the January 2015 mobile roadmap. Then, on 28 May, we had 3008 visits at the time of the April 2015 roadmap’s publication.

![Figure 7: Mobile Web roadmap access statistics (from 16 Jan. to 30 Sept. 2015)](image)

The roadmap has also an excellent SEO ranking, as shown in the Figure 8 below:
3.2. **Social media metrics**

Shortly after the Web site launch, we created a Twitter account called “@appsHTML5”\(^3\) to increase the project’s visibility and broaden its audience by reaching out in particular to developers and influencers. As of 30 September 2015, we have a total of 937 followers, more than the double of the 399 followers the project had at the same date last year. During the last 3 months of the project, we gained around 2 new followers per day.

The Twitter channel has rapidly been gaining in popularity. Figure 9 below shows the profile description of our Twitter account with additional statistics.

\(^{3}\) Project’s twitter account: [http://twitter.com/appsHTML5](http://twitter.com/appsHTML5)
We produced 171 tweets total and the most retweeted and favorited tweets during the reporting period were the following:

<table>
<thead>
<tr>
<th>Tweet</th>
<th>Text</th>
<th>Retweets</th>
<th>Favorites</th>
</tr>
</thead>
<tbody>
<tr>
<td>HTML5 Apps @AppsHTML5</td>
<td>HTML5 is a Web standard! wp.me/p417M6-5F</td>
<td>188</td>
<td>80</td>
</tr>
<tr>
<td>HTML5 Apps @AppsHTML5</td>
<td>2:42 PM – 4 Sep 2015 via WordPress.com</td>
<td>32</td>
<td>29</td>
</tr>
<tr>
<td>HTML5 Apps @AppsHTML5</td>
<td>[Latest Edition] Standards for Web apps on mobile – August 2015 html5apps-project.eu/2015/09/04/lat…</td>
<td>49</td>
<td>25</td>
</tr>
<tr>
<td>HTML5 Apps @AppsHTML5</td>
<td>[Survey Report] State of the Developer Nation Q3 2015 html5apps-project.eu/2015/08/10/sur… <a href="http://t.co/pvylgOk3T">http://t.co/pvylgOk3T</a></td>
<td>31</td>
<td>34</td>
</tr>
</tbody>
</table>

### 3.3. More systematic and proactive online activities aimed at developers

In addition to the rich online presence described above, the project staff animated and monitored a new discussion forum aimed at Web developers dedicated to APIs on the W3C “Specification Discourse” site, which has been set up to make starting and pursuing conversations about Web standards much easier: http://discourse.wicg.io/

In this forum, there is a dedicated category for APIs: http://discourse.wicg.io/c/apis in which discussed topics are related to the Wave Lock API, Media Controls API, Browser Sync API, and much more as shown in Figure 10:
<table>
<thead>
<tr>
<th>Topic</th>
<th>Category</th>
<th>Users</th>
<th>Replies</th>
<th>Views</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>About the APIs category, All discussions about JS APIs.</td>
<td>APIs</td>
<td></td>
<td>8</td>
<td>570</td>
<td>May '14</td>
</tr>
<tr>
<td>Additional use cases for InputDeviceCapabilities</td>
<td>APIs</td>
<td></td>
<td>4</td>
<td>100</td>
<td>15h</td>
</tr>
<tr>
<td>Exposing hardware pixel density and other screen metrics via window.screen</td>
<td>APIs</td>
<td></td>
<td>10</td>
<td>791</td>
<td>3d</td>
</tr>
<tr>
<td>Detect external uri handler</td>
<td>APIs</td>
<td></td>
<td>2</td>
<td>63</td>
<td>6d</td>
</tr>
<tr>
<td>RFC: Proposal for new Web Payments API</td>
<td>APIs</td>
<td></td>
<td>9</td>
<td>397</td>
<td>12h</td>
</tr>
<tr>
<td>Proposal for a Web Background Sync API</td>
<td>APIs</td>
<td></td>
<td>1</td>
<td>115</td>
<td>Sep 20</td>
</tr>
<tr>
<td>Script-Based Accessibility for Web Applications</td>
<td>APIs</td>
<td></td>
<td>7</td>
<td>317</td>
<td>Sep 20</td>
</tr>
<tr>
<td>Selector-based event listeners</td>
<td>APIs</td>
<td></td>
<td>5</td>
<td>188</td>
<td>Sep 14</td>
</tr>
<tr>
<td>IndexedDB 2.0 performance improvements</td>
<td>APIs</td>
<td></td>
<td>5</td>
<td>708</td>
<td>Sep '18</td>
</tr>
<tr>
<td>getUserMedia optional/ohosability</td>
<td>APIs</td>
<td></td>
<td>4</td>
<td>240</td>
<td>Sep 20</td>
</tr>
<tr>
<td>Document templates</td>
<td>APIs</td>
<td></td>
<td>11</td>
<td>391</td>
<td>Aug 22</td>
</tr>
<tr>
<td>Element ancestors, a querySelectorAll for ancestors</td>
<td>APIs</td>
<td></td>
<td>12</td>
<td>317</td>
<td>Aug 19</td>
</tr>
<tr>
<td>Spec Implementation API</td>
<td>APIs</td>
<td></td>
<td>1</td>
<td>267</td>
<td>Aug 18</td>
</tr>
<tr>
<td>upgrades alert() method</td>
<td>APIs</td>
<td></td>
<td>14</td>
<td>380</td>
<td>Aug 15</td>
</tr>
<tr>
<td>Passing an object of attributes to document.createElement() as the second argument</td>
<td>APIs</td>
<td></td>
<td>38</td>
<td>2.4k</td>
<td>Aug 15</td>
</tr>
<tr>
<td>Making NodeList Constructable and Observable</td>
<td>APIs</td>
<td></td>
<td>7</td>
<td>265</td>
<td>Aug 14</td>
</tr>
<tr>
<td>Interrogate default outgoing XMLHttpRequest headers, i.e. Accept-Encoding</td>
<td>APIs</td>
<td></td>
<td>10</td>
<td>1.3k</td>
<td>Aug 12</td>
</tr>
<tr>
<td>Wake Lock API (suppressing power management/sleepsavers)</td>
<td>APIs</td>
<td></td>
<td>6</td>
<td>308</td>
<td>Aug 7</td>
</tr>
<tr>
<td>Proposal: API for devs to allow DOM to be safely suspended when tab is inactive</td>
<td>APIs</td>
<td></td>
<td>4</td>
<td>204</td>
<td>Aug 6</td>
</tr>
<tr>
<td>ImpExpDataURL and ImpExpDownload() and ElementScreenshot()</td>
<td>APIs</td>
<td></td>
<td>7</td>
<td>267</td>
<td>Aug 6</td>
</tr>
<tr>
<td>InputDevice API for identifying mouse events derived from touch</td>
<td>APIs</td>
<td></td>
<td>2</td>
<td>346</td>
<td>Aug 6</td>
</tr>
</tbody>
</table>

**Figure 10:** A snapshot of topics discussed within the APIs Specifiction
4. PARTICIPATION AT EVENTS

During the second year of the project, the HTML5Apps staff presented the project’s results, notably the current status of standardization work and ongoing W3C working groups, at events that were selected to focus on events targeting SMEs and developers.

In particular, we re-evaluated our initial plan for presentations and deprioritized certain events with a broad audience (e.g. Mobile Web Congress 2015) in order to free up resources for events that have a more targeted developer audience. We tracked and analyzed the type of attendees at these presentations to measure the effectiveness of our efforts.

4.1. Presentations

This Section contains the list of presentations given by the HTML5Apps team members during the second year of the project. The HTML5Apps team members had speaking opportunities at five events.


Dominique Hazaël-Massieux was invited to moderate a panel on the usage of HTML5 for apps development. The event consisted of several parallel tracks combined with a large and busy exposition space. The track topics were about mobile payments & retail, mobile strategy & marketing, TV and multiscreen, API strategies, connected car, wearable apps, android, developers, enterprise, and HTML5.

The HTML5 track featured presenters who explained their approach in developing responsive, fast and scalable Web apps or hybrid apps.

From the HTML5Apps project’s perspective, we put a particular emphasis on looking out for “gaps” in HTML5 mentioned at the event. The gaps that people mentioned frequently were:

- For news apps (heard both from Guardian and Metro UK), their main issues were around offline storage and push notifications; inserting adverts in responsive designs can also be somewhat problematic
- A start-up building a social music player has had to wrap their HTML5-based app in a native container to have access to low-latency audio and network
- Payments was also a space where many would love to have as simple integration as native brings, which reinforces the importance of the work that the HTML5Apps project has been conducting in work package 2 (see deliverable 2.3).

This event was an opportunity both to gather input from developers using HTML5 technologies in the field, as well as to inform the participants of the latest standardization efforts in progress in W3C, as summarized and published in the project’s mobile standards roadmap (deliverables 3.3 and 3.4).

2. « Rencontres Inria-Industrie »⁵, 26 November 2014, Lille, France [slides] — see in

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⁴ Apps World London: [http://www.apps-world.net/europe/](http://www.apps-world.net/europe/)

⁵ [https://www.inria.fr/events/rencontres-inria-industrie-2015/](https://www.inria.fr/events/rencontres-inria-industrie-2015/)
Appendix 4] [video]

For fifteen years, Inria has organized the "Inria-Industry Meetings," national topical events during which Inria presents its research and technology transfer offering to companies of a given sector, primarily for SMEs. The city of Lille hosts a “French competitiveness cluster” called EuraTechnologies⁶ dedicated to commerce that brings together the biggest merchants in France and few tech startups and SMEs.

At this event dedicated to Web technologies, Stéphane Boyera spoke about the Web and payments work before an audience composed of over 80 people. He received great attention from SMEs (such as Natural Security) as well as important players in the payment space such as Atos Worldline and Auchan.

3. Internet Society (Isoc.nl chapter) HTML5/WebApps workshop⁷, 2 April 2015, Amsterdam, The Netherlands [slides]

Dominique Hazaël-Massieux was invited by the Dutch ISOC chapter (Isoc.nl) to animate a workshop dedicated to HTML5 Applications, focusing on SMEs and developers. He presented on the recent evolution of the Web platform on mobile. The event was structured in order to facilitate interactions with a dozen of mobile developers (from local SMEs), which led to fruitful discussions on their own experience with developing applications.

4. WWW2015⁸, 20-22 May 2015, Florence, Italy

The HTML5Apps team was present at the annual World Wide Web conference, WWW2015. Because the project changed its dissemination focus to SMEs and developers as recommended by the European Commission, we very carefully planned the involvement of the HTML5Apps project in the WWW2015 conference. Knowing that the WWW series of conference is usually more attended by academics and researchers, we decided to work with the WWW2015 conference organizers to enable local developers to participate in the HTML5Apps session scheduled within the W3C track of that conference. In particular, we asked the W3C Italy Office to advertise the session to the Italian Web developer community.

HTML5Apps project member Marie-Claire Forgue advertised the HTML5Apps project through the W3C track⁹ (see Figure 11) before an audience composed of about 40 people. Dominique Hazaël-Massieux presented the status of Web APIs work [slides] and a Telecom Italia representative talked about their WebRTC experimentations done within the Nubomedia EU project.

The session participants then engaged with the presenters, both asking questions related to Web development and W3C specifications and providing input as to which challenges they would like to see addressed for developing Web applications, bringing highly useful input to the standardization opportunities the project described in deliverable 2.3.

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⁵ Rencontres Inria-Industrie: http://www.inria.fr/centre/lille/agenda/technologies-du-web-ce-reseau-ressources-numeriques-mondial
⁶ EuraTechnologies cluster: http://www.euratechnologies.com/en
⁷ Isoc.nl: http://isoc.nl/events/html5webapps-workshop-met-dominique-hazael-massieux/
⁸ WWW2015: http://www.www2015.it/
⁹ W3C Track @ WWW2015: http://www.w3.org/2015/05/w3c-track.html
5. The Edge Conference\textsuperscript{10}, 27 June 2015, London, UK

This event directly, aimed at a developer audience, consisted of a day of group discussion and debate on advanced Web technologies for developers and browser vendors.

Given the focus of the event on developers with advanced knowledge of exiting possibilities and challenges of Web technologies, the day provided a great opportunity for the HTML5Apps staff to evaluate which standardization opportunities were the most pressing from the perspective of the participants.

As a summary, HTML5Apps participated in the following events while reaching out to diverse audiences, as shown in Table 2 below:

<table>
<thead>
<tr>
<th>Event</th>
<th>Business community</th>
<th>Scientific community</th>
<th>European SMEs</th>
<th>Web Developers</th>
<th>Press / Analysts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apps World 2014</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Rencontres Inria-Industries</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Isoc.nl Workshop</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>WWW2015</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Edge 2015</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

Table 2: Audiences exposed to HTML5Apps during the 2nd year of the project

\textsuperscript{10} The Edge conference 2015: [https://edgeconf.com/2015-london](https://edgeconf.com/2015-london)
5. Press Outreach

Project results and events provided good content for press releases and publications (online and/or paper).

5.1. Press Releases

According to the plan, the HTML5Apps team issued three press announcements: one at beginning, the second one mid-way, and the last one at the end of the project. We detail below the last 2 announcements to the press that happened during the second year of the project.

1. On 16 October 2014, the project disseminated its second press release announcing the launch of the Web payments Activity.

W3C Launches Web Payments Initiative

This press release is available in many languages: English (full text available in Appendix 1), French, Chinese, Italian, Spanish and Swedish. This press release received the support via testimonials from Bloomberg, Gemalto, GRIN Technologies, Ingenico Group, NACS, Rabobank and Yandex.

We collected 29 press articles out of this announcement. They are linked from the dedicated press page11 on the project’s Web site and also available in Appendix 3.

The press release distribution used the following four communication channels:

- Through the CORDIS Wire, the service provided by the European commission giving access to information sent by European innovation and research stakeholders,
- Through the W3C Offices’ press lists,
- Through the dedicated W3C news mailing list (w3c-news@w3.org - Archive), aiming at an international press audience.
- Through a list of French reporters. This list targets press people specialized in banking, IT and Web domains.

2. On 29 September 2015, the project disseminated its final press release.

HTML5Apps paves the way to future W3C payment standards and advances mobile Web standardization roadmap”

This press release was issued at the end of the project. It has been distributed using Cordis Wire and to a list of over 50 European reporters. The press announcement is available in English (see Appendix 2) and in French, German and Spanish.

At the time of writing, we are just starting to collect press articles generated from this announcement.

6. CONCLUSION

Following a project dissemination plan that was revised to follow the recommendations of the European Commission, this report shows very satisfactory results obtained during the second year of the project.

Through publishing interviews with three European SMEs representatives, the project documented and disseminated the “current state of the Art” in use of HTML5 technology for app development to a wider audience.

All team members contributed to the project’s outreach activities and successfully reached out to EU audiences with a stake in HTML5 applications, with a particular focus on developers and SMEs.

HTML5 applications are becoming increasingly popular and the recent flurries of articles are encouraging developers to abandon other technologies in favour of HTML5. Web developers are now referring to the mobile roadmap created by HTML5Apps to learn about Web APIs implementation statuses, as witnessed by the popularity of the roadmap (excellent SEO ranking as the words “Web mobile roadmap” displays the document on the first page of the Google search results).

Thanks to the planned dissemination actions, the project has successfully reached out to a targeted audience of European Web developers and SMEs. Both the project’s Web site and twitter handle metrics are asserting a pertinent online presence with compelling blog posts and twitter messages. The team’s presence at key developer events helped to position the project’s work as a key enabler of development solutions on the Web platform over native platforms.
APPENDIX 1: PRESS RELEASE - 15 OCTOBER 2014

W3C Launches Web Payments Initiative

Opportunity for Industry to Reduce Fraud, Improve Usability, and Encourage Innovation

15 October 2014 — The World Wide Web Consortium (W3C) announced today a new initiative to integrate payments seamlessly into the Open Web Platform. W3C calls upon all industry stakeholders — banks, credit card companies, governments, mobile network operators, payment solution providers, technology companies, retailers, and content creators— to join the new Web Payments Interest Group and leverage the unique ability of the Web to bridge ecosystem diversity and reach users everywhere, on any device. The result will be new business opportunities, an improved user experience for online transactions, reduced fraud, and increased interoperability among traditional solutions and future payment innovations.

"The Federal Reserve is working with diverse participants and organizations to improve the payment system in ways that make it safer, faster, more efficient and accessible for everyone," said Claudia Swendseid, Senior Vice president at the Federal Reserve Bank of Minneapolis. "We appreciate W3C's efforts in this regard and look forward to participating in the new Web Payments Interest Group."

Big Challenges, but Big Potential for Global E-Commerce

E-Commerce is thriving and predicted to reach $1.471 trillion this year, an increase of nearly 20% from last year. According to Forrester research, one third of those transactions will take place on a mobile device. And yet, a number of obstacles stand in the way of even stronger growth on those devices.

The first is usability. People shopping online add to their shopping carts, but they rarely complete their purchases. Small screens and small keyboards, combined with the usual requirement to create an account and share personal information with unknown merchants are some of the reasons that the average shopping cart abandonment rate is 97% on mobile devices.

A second reason is fraud. High-profile stories of massive credit card number theft have demonstrated both the inadequacy of today's approaches to sharing sensitive information and their high cost. The rate of fraud in "card not present" transactions (such as those common for transactions via Web sites) is 10 times higher than that when physical cards are used. These risks must be addressed if online commerce is to flourish.

"Today, payment details being stolen has outpaced all other consumer concerns worldwide to shop on-line," said Michel Leger, Ingenico Group. "Bringing together all stakeholders into this Interest Group is the opportunity to create open standards that will minimize
online fraud, increase consumer confidence and improve shopping experience. Working all together will enable us to do it right."

Because the Web is so widely available, strengthening support for payments has the potential not just to improve usability and reduce the risk of fraud, but also to create new opportunities for businesses and consumers in areas such as coupons and loyalty programs and crypto-currencies. Through mobile applications, the Web can also make "brick and mortar" transactions more secure and convenient. Although we are seeing innovation in mobile payment systems, the lack of standards makes it more difficult to adapt to new payment approaches (e.g., crypto-currencies) or new payment providers. Fragmented regulatory environments further complicate the payments landscape.

**Integrating Payments into the Open Web Platform**

To deepen our understanding of these challenges and integrate solutions into Open Web Platform, W3C has chartered a Web Payments Interest Group, chaired by Erik Anderson (Bloomberg) and David Ezell (Association for Convenience & Fuel Retailing).

Global stakeholders from all parts of the industry will enumerate use cases and scenarios, for topics such as online payments, off-line payments, "floor-limits," the role of regulations on technology, international low-value remittances, general retail payments, bill payments, and utility payments. The group will study the current gaps in Web technology regarding usability, security, and privacy, and recommend new work to fill those gaps. Because a successful integration of payments into the Web requires extensive cooperation, the Interest Group will also liaise with other organizations in the payment industry that are using Web Technologies to foster alignment and interoperability on a global scale.

The Interest Group will first focus on digital wallets, which many in industry consider an effective way to reduce fraud and improve privacy by having users share sensitive information only with payment providers, rather than merchants. In addition, wallets can simplify transactions from mobile devices and make it easier to integrate new payment innovations. To be successful, all parties involved in a transaction must agree to use the wallet system, but systems to date have not demonstrated the level of interoperability required for broad adoption. Lack of standards for processing payments makes it difficult to implement wallets and gain the benefits of automation. While the Web Payments Interest Group is not chartered to develop new payment methods, it will create a framework to ensure that Web applications can interface in a standard ways with all current and future payment methods. Mobile use cases play an important role in this work, but the framework will encompass the full range of devices people use for online payments.

The new Interest Group will be the focal point for W3C's work on Web payments, but discussions have happened and will continue to happen in many venues within W3C, including:

- Recent [W3C Workshops](https://www.w3.org/2015/08/2015-the-web-and-payments/) on Cryptography, Authentication, and Hardware Tokens and [the Web and Payments](https://www.w3.org/2014/07/2014-the-web-and-payments/)
• The Web Payments Community Group, a community-led pre-standards discussion forum.

Learn more about W3C's work on Payments on the Web, supported in part by the European Union through the HTML5Apps project.

About the World Wide Web Consortium
The World Wide Web Consortium (W3C) is an international consortium where Member organizations, a full-time staff, and the public work together to develop Web standards. W3C primarily pursues its mission through the creation of Web standards and guidelines designed to ensure long-term growth for the Web. The Open Web Platform is a current major focus. Over 400 organizations are Members of the Consortium. W3C is jointly run by the MIT Computer Science and Artificial Intelligence Laboratory (MIT CSAIL) in the USA, the European Research Consortium for Informatics and Mathematics (ERCIM) headquartered in France, Keio University in Japan, and Beihang University in China, and has additional Offices worldwide. For more information see http://www.w3.org/

Testimonials from W3C Members

Bloomberg
We are entering a transformational moment in time in the field of payment technologies as there are more options than ever offering frictionless & borderless transactions. Adapting existing payment standards, as well as old and new technologies to work in a browser environment will help connect more than 1 billion people to the "Internet of Money." We must work together to achieve this goal and make a difference for everyone. Bloomberg is a proud supporter of these efforts.
Justin Erenkrantz, Head of Compute Architecture at Bloomberg

Gemalto
We are pleased to support W3C’s initiative as this will boost and facilitate online digital payments by providing a smooth & secure integration of payment functions within web merchants’ portals. Our solutions encompass mobile Payments, mobile Banking and Mobile ID, across a comprehensive portfolio of devices and multiple security frameworks.
Philippe Cabos - Product Director - Mobile Wallet & Secure Applications at Gemalto

GRIN Technologies
The exponential growth in online payments is only exceeded today by the growth in connected devices. GRIN Technologies, Inc, the Connected Life Company, is pleased to participate in the future development of Web Payments standards at W3C and are looking forward to working with others to create the digital wallet of the future. We recognize the challenges and welcome the opportunity to participate in the development of a healthy,
secure payments ecosystem, enabling a future where everyone’s life is connected.  
*Daniel Austin, CEO & Founder, GRIN Technologies, Inc.*

**Ingenico Group**

Payment is all about security, universality and increasingly cross channel - in store, online and mobile. Our new OS is the place where security and open world meet. Web-based technologies are the backbone of tomorrow’s payment eco-system, enabling consumers to enjoy a seamless, open whilst secure, purchasing experience. We look forward to actively participating in the new Web Payments Interest Group, leveraging on our 30-year expertise in payment services.

*Michel Leger, Executive Vice President Global Sales, Strategy and Marketing*

**NACS**

W3C serves a critical role in defining the future of commerce - both online and on the go," says Gray Taylor, Executive Director of PCATS, the Convenience and Petroleum Industry’s technology organization, and Payments Consultant to the National Association of Convenience Stores (NACS). "The importance of mobile commerce to our membership motivates us to support the efforts of W3C in payments, and we will continue to do so. The Web Payments Workshop was a great example of how W3C can use its well-known brand to bring together the industry thought leaders to solve hard problems on the web, and the creation of the new Web Payments Interest Group is essential to carry the momentum forward. W3C’s IP policy and focus on open and transparent standards will enable the consumer to have a feature rich and consistent experience as mobile commerce evolves, and we at PCATS and NACS are excited to continue participation in this valuable work.

*Gray Taylor, Executive Director of PCATS, the Convenience and Petroleum Industry’s technology organization, and Payments Consultant to the National Association of Convenience Stores (NACS)*

**Rabobank**

As an innovator in the payments industry, Rabobank is well aware of customer needs for web payments. If standards are drafted from either a customer, a technology or a retail perspective only, they would be lacking many ingredients to be a global success for all customer segments and service providers worldwide. Therefore, it is important for Rabobank and for many banks for that matter, to be involved in this process at W3C from the beginning.

*Evert Fekkes, Business Information Manager, Rabobank Nederland*

**Yandex (English)**

We sat down with the major players in the Russian payments market to discuss the idea of the emerging standard that the W3C is going to start developing and we received a lot of positive responses. The emergence of a unified set of rules is an important issue for businesses, who waste lots of resources every time they want to integrate with new payment solutions. The lack of industry standards also hinders the development of payment projects that are truly 'cross-border'. A unified standard for online payments would help reduce risks associated with fraud, save businesses time and resources wasted
on technical integration, lay the groundwork for entirely new products, and make sending and receiving payments online as easy as sending and receiving email thanks to 'mailto'.

Evgeny Vinogradov, Head of Analytic Services at Yandex.Money
APPENDIX 3: PRESS RELEASE - 29 SEPTEMBER 2015

HTML5Apps paves the way to future W3C payment standards and advances mobile Web standardization roadmap

29 September 2015, Sophia Antipolis: The two-year EU-funded HTML5Apps project proudly looks back to its achievements. The project, ending in September 2015 successfully accelerated the development of standard Web technologies required to make HTML5 apps competitive with native apps, specifically in the areas of Web payments and rich mobile Web APIs.

HTML5Apps initiated W3C Payments standardization work

Payments have been identified early on as a major gap, and on March 2014, the HTML5Apps project organized a W3C Workshop on Web payments. It immediately gathered a lot of interest from a wide variety of stakeholders, ranging from banks, merchants, payment service providers, mobile operators, and many others. As a result, a W3C Web Payments Interest Group was formed. Chaired by Bloomberg and NACS representatives, the group is composed of 104 participants who have been busy at identifying specific standardization opportunities and building consensus on which of these need to be addressed within W3C.

After gathering industry use cases and requirements to help ensure that the standards developed have the ability to include business-to-business (B2B) payments as well as financial institution-related payments, the group proposed to standardize APIs - supporting functionality such as payment instrument registration, payment initiation, and payment completion - to enable an automated secure foundation for future Web payments capabilities.

As a result, W3C is now in the final stages of starting new standards work to make Web payments both easier and more secure.

HTML5Apps publishes mobile Web Standardization Roadmap

HTML5Apps conducted a series of interviews with European SMEs to investigate their need for fast and easy development of innovative Web-based services. As a result, there is a need and strong support for in-progress standards around offline access, push notifications and access to device APIs. Where specification efforts had not started yet, the project brought them to the W3C Web & Mobile Interest Group to report new standardization opportunities.
“Seeking input directly from European developers and SMEs enabled us to better understand their challenges of using Web apps over proprietary formats,” explains Dominique Hazaël-Massieux, HTML5Apps lead. “As a result, and to facilitate information, coordination and participation from these developers, we maintained a standardization roadmap tracking efforts inside and outside of W3C.”

For the past two years, the HTML5Apps team published, on a quarterly basis, a roadmap entitled “Standards for Web Applications on Mobile”. Acclaimed by Web developers, this document summarizes the various technologies developed in W3C that increase the capabilities of Web applications, and how they apply more specifically to the mobile context.

The latest edition of this roadmap was published in August 2015. It notably includes additions related to emerging work such as the proposed charter for a Web Payments Working Group.

About HTML5Apps

The goal of the HTML5Apps project is to close the gap between native and HTML5 apps through the standardization of missing HTML5 functionalities. The project is lead by ERCIM (the European Research Consortium for Informatics and Mathematics), the European host of W3C, an international industry consortium whose mission is to develop Web standards and guidelines designed to ensure long-term growth and stewardship for the Web. Web inventor Sir Tim Berners-Lee directs W3C. For more information, see http://html5apps-project.eu/ and follow us @appsHTML5

Press contact: Marie-Claire Forgue, mcf@w3.org, +33676863341

Web Resources:
- HTML5Apps EU project: http://html5apps-project.eu/
- W3C Web Payments Workshop: http://www.w3.org/2013/10/payments/
- W3C Web Payments Interest Group: http://www.w3.org/Payments/IG/
- W3C Web Payments Interest Group participants https://kwz.me/My
- EU SMEs interviews: http://html5apps-project.eu/tag/sme-interview/
- W3C WebMob: http://www.w3.org/Mobile/IG/
- Standards for Web Applications on Mobile: http://www.w3.org/Mobile/mobile-web-app-state/
- W3C Web Payments Group Charter: http://www.w3.org/2015/06/payments-wg-charter.html
- ERCIM: http://www.ercim.eu/
- W3C: http://www.w3.org/
APPENDIX 3: PRESS ARTICLES (MOST RECENT FIRST)

- [Cordis Wire] 30 September 2015: HTML5Apps paves way to future W3C payment standards & advances mobile Web standardisation roadmap, HTML5Apps, W3C, Web Payments Interest Group, Mobile Web Roadmap
- [Fed Focus] 1 September 2015: Web payment standards play a key role in payment system improvement, W3C, HTML, Web Payments Interest Group, Jeffrey Jaffe, Tim Berners-Lee
- [The Next Web] 2 August 2015: How the W3C is trying to standardize payments on the internet, Andrii Degeler, W3C, Web Payments Interest Group
- [Banque.net] 21 April 2015: W3C travaille sur une normalisation des paiements web, Web payments IG, W3C (in French)
- [Heise Open Source] 3 February 2015: W3C: Stand der Dinge für Mobilentwickler (W3C: State of Art for Developers), HTML5Apps project, mobile Web apps roadmap, W3C
- [The Banker] 5 January 2015: On the Web behind paywall, Jeff Jaffe and Stéphane Boyera, W3C, Web Payments Initiative, HTML5Apps
- [The Guardian] 10 December 2014: [Keynote video at “Every Second Counts Forum”] Tim Berners-Lee: We must take to the streets to protect the open web [30:46], W3C, Web Payments


**[Mr. Webmaster]** 21 October 2014: *W3C: uno standard per i pagamenti in Rete*, Alfonso Maruccia, W3C, Web Payments Initiative, NFC (in Italian)


**[ZDNet.fr]** 17 October 2014: *Le W3C se lance sur le paiement en ligne*, Guillaume Serries, HTML5Apps, W3C, Web Payments Initiative and IG, Stéphane Boyera (in French)

**[Cordis News]** 17 October 2014: *HTML5Apps and W3C Launch Web Payments Initiative*, HTML5Apps, W3C, Web Payments Initiative and IG


**[Heise]** 16 October 2014: *W3C will Payment-Standard entwickeln*, W3C, Web Payments Initiative (in German)


**[Digi.no]** 16 October 2014: *Lager betalingsrammeverk for weben*, Harald Bronbach, W3C, Web Payments Initiative and IG (in Norwegian)

**[Prog.hu]** 16 October 2014: *Egyszerűbbé és szabványossá tenné a webes fizetést a W3C*, W3C, Web Payments Initiative and IG (in Hungarian)

**[Finextra]** 15 October 2014: *W3C standards body looks to improve web payments*, W3C, Web Payments Initiative and IG

**[ZDNet]** 15 October 2014: *W3C launches a Payments Interest Group to monetize the web*, Jack Schofield, W3C, Web Payments Interest Group

**[CNet]** 15 October 2014: *Target, banks push to improve Web-based payments*, Stephen Shankland, W3C, Web Payments Interest Group, NFC

**[NACS News & Media Center]** 15 October 2014: *New Payment Integration Initiative Launches*, W3C, Web Payments Interest Group

APPENDIX 4: SLIDES PRESENTED AT THE INRIA-INDUSTRIES EVENT

W3C Web Payments Activity
Stephane Boyera
boyera@w3.org

Supported by

Opportunities

- E-commerce is booming: +20% in 2014 reaching 1.471 trillions
- Mobile payments is also booming: avg +40% in the last 3 years
- The frontier between online and physical payments is blurring
Challenges

- A very small percentage of people finalizes their buying:
  - 72% average cart abandonment rate across device
  - 97% on mobile
- Online Fraud (CNP) is 10 times higher:
  - 0.09% fraud rate on physical credit-card payments
  - 0.9% fraud rate on online payments
- 14% of total debit cards in the US exposed to data breaches in 2013 (5% in 2012)
- New payments instruments: e.g. crypto-currencies
- New requirements: e.g. micro-payments, coupons, loyalty cards

Process

- A workshop to query the community at large and evaluate the momentum for standardization and key work items
- Post-workshop stakeholders engagement within W3C
- Launch of relevant groups (Interest group, Technical Working Group(s))
W3C Web Payments Workshop - Stakeholders

- Banks: BBVA, HSBC, Rabobank, ING, BPCE, CA
- Payment Industry: Gemalto, SAGE, Worldline
- Standardization Bodies: PCI, G5, IETF
- Regulators: FEDERAL RESERVE, FINANCIAL SERVICES EU
- Alternative Payment/Currency providers: Ripple, Ven
- Mobile & Web Industry: Google, Microsoft, Orange, AT&T

Workshop Output: Next steps

- A Web Payments Interest Group to act as steering committee
  - Creating a forum for all the stakeholders to cooperate and enable a level playing field:
    - Web Industry & Browser makers
    - Mobile Industry
    - Finance Industry
    - Merchants
  - New technical work items organized around:
    - Wallets: Providing a seamless experience for users to manage multiple payments instruments & access new value-added services (loyalty, coupons, etc.)
    - Authentication & security
      - Moving out of CC info Exchange
      - Using stronger authentication methods such as hardware tokens, biometrics, second factor authentication etc.
Conclusion

- Payments on the Web is facing a few challenges that need a response from all the stakeholders involved in the domain.
- A community including Web industry, Telecom industry, Finance-Payments industry and Retailers/e-commerce industry is forming at W3C to tackle these challenges
- The new activity is just starting and requires involvements of all parties to shape the agenda and take into consideration all the requirements
- We would be happy to understand your current focus and interests
- If the goals that we set in the Charter align with yours, we would encourage you to join W3C and the Interest Group – and work with us on these new standards.
References

- W3C Web Payment Workshop Report: http://www.w3.org/2013/10/payments/final_report.html
- W3C Web Payments Home Page: http://www.w3.org/Payments
- W3C Web Payments IG charter: http://www.w3.org/2014/04/payments/webpayments_charter.html
- First face-to-face meeting minutes: http://www.w3.org/2014/10/f2f-wpay-minutes.html
- Web Payments IG Wiki: https://www.w3.org/Payments/IG/wiki/
- W3C Workshop on Authentication, Hardware Tokens and Beyond: http://www.w3.org/2012/webcrypto/webcrypto-next-workshop/Overview.html
- HTML5Apps EU Project “Closing the gap with Native”: http://html5apps-project.eu/
- Contact: Stéphane Boyera – boyera@w3.org